



Course syllabus

Faculty of Technology
Department of Mathematics

1MA133 Linjär algebra för ingenjörer, 7,5 högskolepoäng
Linear algebra for engineers, 7.5 credits

Main field of study

Mathematics

Subject Group

Mathematics

Level of classification

First Level

Progression

GIN

Date of Ratification

Approved by Faculty of Technology 2013-12-16
The course syllabus is valid from autumn semester 2014

Prerequisites

General entry requirements and Mathematics D or Mathematics 3c (Field-specific entry requirements 8/A8).

Objectives

The student should be able to

- perform computations with matrices and vectors, and apply them to describe and interpret geometrical properties
- perform computations with scalar product, vector product and determinant, and make geometrical interpretations
- establish equations of lines and planes in parameter and normal forms, and make geometrical interpretations
- compute angles and distances between points, lines and planes
- understand the definition of linear mapping and its matrix representation, and to compute matrices for projections, reflections, rotations and other matrices of linear mappings
- determine and interpret eigenvalues and eigenvectors
- describe basic definitions, prove some basic theorems, and apply them in computations
- interpret, communicate and argue using mathematic notions.

Content

Linear equation systems, Gauss elimination, matrices, vectors, basis and change of coordinates, scalar product, vector product, determinants, lines, planes, angles, distance computations, linear mappings, matrices for linear mappings, compositions of linear

mappings, diagonalizations, some parts concerning determinants of higher order.

Type of Instruction

Lectures and seminars. Compulsory assignments may be given during the course.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

On request, students may have their credits translated to ECTS-marks. Such a request must be sent to the examiner before the grading process starts.

The student's knowledge is assessed in the form of written examinations, which involve both computation and theory questions. Furthermore, continuous assessment can be used during the course. The principal assessment method for the course is determined at the beginning of the course.

Course Evaluation

A course evaluation will be carried out and compiled after the course is completed. The compilation will be presented to the current board as well as to the students and filed.

Required Reading and Additional Study Material

Required Reading

Torsten Lindström. *Med fokus på linjär algebra*, Studentlitteratur, latest edition. 152 pages.

Material from the department